

species, *Neuropteris Loshii* and *N. tenuifolia*, appear to be common to the Carboniferous and Permian systems.

The author then points out, that, owing to the variations in different parts of the same frond (variations corresponding to those in many recent Ferns), the described species of *Neuropteris* have been too much multiplied; and he concludes with critical observations on a few of them.

MISCELLANEOUS.

Remarks on the Zoë of Eurynome aspera, and the Habits of the Animal in Confinement. By Prof. KINAHAN.

THE passage of the majority of the higher Crustacea through the Zoë state is now a recognized fact in zoology, and fresh species are turning up almost daily as Zoës. The present case is an example of this, as the Zoë of any of the Lambridæ, as far as I know, has never been described.

The specimens from which the ova were obtained were captured during one of the minor excursions of the British Association, in a dredging party, formed through the kindness and liberality of that well-known and indefatigable naturalist, Robert M'Andrew, Esq., consisting of Professors Allman, Archer, Redfern, Rev. P. Carpenter, of Warrington, Robert M'Andrew, Esq., and son, Dr. Edwards, Mr. Hyndman, and myself. The scene of our labours was the Kish Bank, where, in addition to many other Crustacea, five specimens of *E. aspera* were obtained, two of them loaded with spawn.

These I placed in a small salt-water tank, changing the water occasionally. They were first placed in the tank on the 1st of September; the ova then being of a bright salmon colour. On the 7th I found that the ova in one of them had become much darker, being of a dirty drab colour under the microscope, but little change could be detected in the appearance of their contents. On the 10th the ova were of a much darker drab, and the black eyes of the Zoës plainly distinguishable by the naked eye. The parent had all this time most assiduously kept up a perpetual current around and through the ova, seemingly by means of the pedipalps, at the same time keeping the mass in constant vibration by rhythmical up-and-down motions of the abdominal false feet, to which the ova were attached. She also sought the sunny side of the tank more than her wont now is. On the evening of the 12th the Zoës could be distinguished coiled up in the ova, fully formed, and the motions for aëration were very vigorously carried on; and on examining the tank on the morning of the 13th, I found it completely filled with many thousands of Zoës, which kept together in one continuous swarm at the side nearest the light. These gradually increased in size, and also altered in their form, seeming so active and healthy, that I was in hopes I might have been able to trace their complete changes; but unfortunately the second specimen

of *E. aspera* died on the evening of the 17th, poisoning the tank, so that on the morning of the 20th I found my poor Zoës dead, putting a stop to experiments as far as they were concerned.

The parent crab, however, still continues in health and vigour, although the water has not been changed for the last six weeks, and does not now consist of more than two pints in a circular tank, six inches in diameter, and although two green crabs, *C. mænas*, during the time died from the poisonous effects of impure water. Its habits are interesting: it is but a sedentary animal; it seeks the light occasionally, generally, however, keeping to the shadiest part of the tank. At night it is most active, running over the sides and bottom of the tank after the lights are extinguished, the noise it makes being considerable as it rattles over the glass. Its mode of feeding is sometimes most amusing. On its back, completely concealing it, is a large mass of sponge, which of course the crab carries about with it everywhere; it, however, causes these strange passengers to pay toll occasionally, as I have frequently seen the *E. aspera* stretching its long anterior limbs backwards, over its carapace, and, deliberately tearing off a portion of the sponge, coolly proceed to tuck it in between its jaws: sometimes holding the piece of sponge in one of the chelæ, it daintily tears off small pieces from the mass, which it then quietly devours. I detected it once feasting on a little Varying Hippolyte, *H. varians*, which was in the same tank; but generally speaking, its food must consist of the Entomostraca and other minute animals, &c., which abound in the water, and possibly also the *Ulva*. It is a most sluggish animal, slow and deliberate in its movements, and during the day remains with its back to the light in a lair it has formed under a projecting piece of *Ulva lactuca*, its long and beautifully carved arms kept semiflexed at some distance from each side of its body; and the whole animal perfectly motionless, except an occasional vibration of the foot-jaws, looking like some monster in his den. The species is not uncommon in moderately deep water on the banks around the coast, and I would recommend it as a good species to those who keep tanks, as it is generally tenacious of life, and bears travelling well, living for a long time, even in a small quantity of water.

My tanks, in which I have succeeded in keeping many of the rarer Crustacea, are so convenient, and their arrangement so simple, that I am tempted to describe them. They consist of a number of what are ordinarily called propagating-glasses (the dealers call them 'pro'-glasses'), six inches in diameter, and nine inches high; the only thing placed in them besides the water is the *Ulva lactuca*, selecting a broad piece unattached to stones, as I find that stones harbour dirt; the sea-weed must be a large piece, as one of its chief purposes is to afford cover and shelter to the animals from the light. It requires to be occasionally renewed, as the animals feed on it. I seldom introduce Mollusca of any kind, as I find them troublesome by dying at unexpected times, and thus poisoning the tank, and I have never seen any occasion for their services in keeping my tanks either clean or healthy.

In this same tank I have had at various times, under the above conditions, the following rare Crustacea:—

Thia polita, for four months.

Perimela denticulata, two months: hatched Zoës, and was itself killed and partially devoured by *Thia*.

Hippolyte Cranchii, one month.

H. pusiola, one month.

Crangon fasciatus, three weeks: all killed by *Thia*.

The Varying Prawn (*P. varians*), two months.

Squill Prawn (*P. squilla*), two months.

Common Shrimp (*C. vulgaris*), three weeks.

Hippolyte varians, three months.

Most of them died merely through neglect in changing the water, which I generally do not oftener than once a month. The tank is kept in a shady place, and uncovered, and the animals are but seldom fed, and then as often on small snails or wood-lice as anything else. The sea-water for change is kept in a large bottle with a narrow neck and transparent sides, closely corked, and sometimes, when used, has been three months or upwards in the bottle; so that the keeping of marine animals of the crustacean group is not such a difficult task as is commonly supposed.

The Zoës differ from those of *Cancer pagurus* in having no lateral or frontal spines on the carapace, and in having no spines at the inner angle of each joint of the abdomen below. The carapace is also very large; the abdomen is divided into six rings; the thoracic limbs are three (?), the most anterior hardly to be distinguished in form from the external foot-jaw of many of the Porcellanidæ.—*Proc. Dubl. Nat. Hist. Soc.*, 4th December, 1857.

On a new species of Barbet from the Upper Amazon.

By P. L. SCLATER, M.A., F.L.S., &c.

EUBUCCO AURANTICOLLIS, sp. nov.

Viridis, pileo et mento summo intense sanguineo-rubris, torque cervicali postica clare flavicanti-viridi: cervice antica aurantia; pectore coccineo, ventre flavo et viridi strigato: rostro flavo, pedibus nigris.

Long. tota 5.5, alæ 2.6, caudæ 1.9.

This beautiful species of Barbet closely resembles *E. Richardsoni* figured in Gray and Mitchell's Genera of Birds, but may be distinguished by its light green posterior neck-band, orange and not lemon-yellow throat, and deeper scarlet breast. Mr. Bates has transmitted five examples from the Rio Javarri, which are all alike. The *Eubucco Richardsoni* is from New Grenada (Bogota collections).

The British Museum contains an example of this new species, collected by Hauxwell on the Ucayali in August 1852 and marked "Irides red."—*Proc. Zool. Soc.* Nov. 24, 1857.